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January 30, 2008

Mr. Robert M. Baratta, Jr.
Freeborn & Peters LLP
311 South Wacker Drive
Chicago, Illinois 60606

RE: Stockpile Surcharge Loading of the Existing Seawall at DuSable Park, 400 N Lake Shore Drive, Chicago, IL – STS Project No. 200607131

Dear Mr. Baratta;

Pusuant to the US Environmental Protection Agency's (USEPA) request, STS herein analyzes the surcharge pressure due to the soil stockpile in the northeast corner of DuSable Park. The stockpile measures approximately 140 feet by 45 feet in plan dimensions. The toe of the stockpile is located 8 to 10 feet from the Jersey barrier line, which means it is set back at least 25 feet (on average) from the existing seawall. The eastern half of the pile extends roughly 20 to 25 feet above existing grade. The western portion of the stockpile is shorter. It extends 10 to 15 feet above existing grade.

The active zone of the seawall can conservatively be defined as the area that projects upward from the bottom of the channel on a 45 degree angle. Any surcharge loads (due to adjacent roadways, crane pads, or stockpiles) or pressures within that zone, could impose lateral pressures on the retention system. Based on the soundings performed by Collins Engineers, the active zone around DuSable Park extends approximately 15 to 20 feet behind the seawall. Even at an offset of 20 feet, the soil stockpile is not within the active zone of the existing seawall.

STS performed a stress distribution analysis to determine the lateral pressure on the wall at the midpoint of the high (eastern) portion of the stockpile. At its current offset of 25 feet, the lateral pressure due to the stockpile will not reach the wall above the channel bottom of Ogden slip. In other words, the stockpile will not exert any lateral pressure on the wall above the channel bottom. Using a conservative earth pressure coefficient of 0.5, the lateral pressure below the channel bottom at its maximum will be negligible. A copy of the analysis is attached.

We appreciate this opportunity to be of service to you. If there are any questions please do not hesitate to contact us.

Respectfully,

STS CONSULTANTS, LTD.

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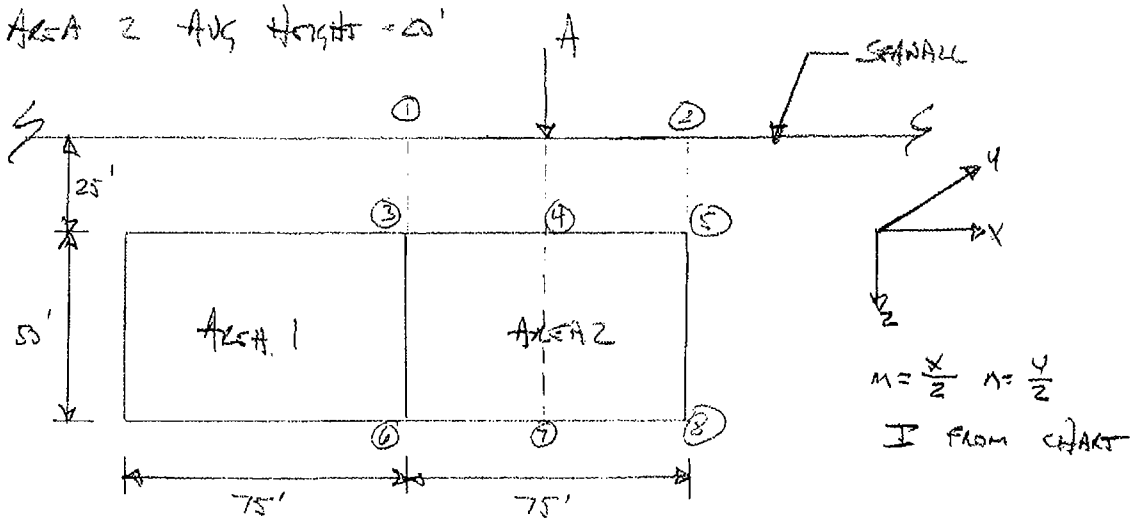
Calculation Sheet

Project				Subject			
CHICAGO SPIRE				DUST KILN STOCKPILE			
Originated By	Date	Checked By	Date	STS Job No.	Scale	Sheet No	Of
[illegible]	1/24/08	TS	1/24/08	20060713.1			

CHECK INFLUENCE DUE TO STOCKPILE

AREA 1 AVG HEIGHT = 10'

AREA 2 AVG HEIGHT = 20'



STRESS AT POINT A = 2 (A287 - A254)

	A287 X = 37.5 Y = 75			− A254 X = 37.5 Y = 25			
Z	m	n	I	m	n	I	ΔI
1	37.5	75	0.25	37.5	25	0.25	0
5	7.5	15	0.25	7.5	5	0.25	0
10	3.8	7.5	0.25	3.8	2.5	0.25	0
15	2.5	5	0.25	2.5	1.7	0.25	0
20	1.9	3.8	0.24	1.9	1.3	0.23	0.01
25	1.5	3.0	0.23	1.5	1	0.20	0.03
30	1.3	2.5	0.22	1.3	0.8	0.18	0.04
35	1.1	2.1	0.20	1.1	0.7	0.16	0.04
40	0.9	1.9	0.19	0.9	0.6	0.15	0.04
45	0.8	1.7	0.18	0.8	0.6	0.13	0.05

$$\frac{z^3}{x^4} \tag{8-26}$$

t).
r stress are also available.
grate a line load over a finite area.
gration of Eq. 8.26 and derived the
ess under the corner of a *uniformly*

$$\frac{+ 1)^{1/2}}{+ m^2n^2} \times \frac{(m^2 + n^2 + 2)}{(m^2 + n^2 + 1)}$$

$$\frac{n^2 + 1)^{1/2}}{1 - m^2n^2}\right] \tag{8-27}$$

s,

(8-28)
(8-29)

uniformly loaded area, respectively.
geable. Fortunately Eq. 8-27 may be

$$q_o I \tag{8-30}$$

epends on m and n.
m and n are shown in Fig. 8.21.

Example 8.17 is loaded uniformly by

the corner of the footing at a depth

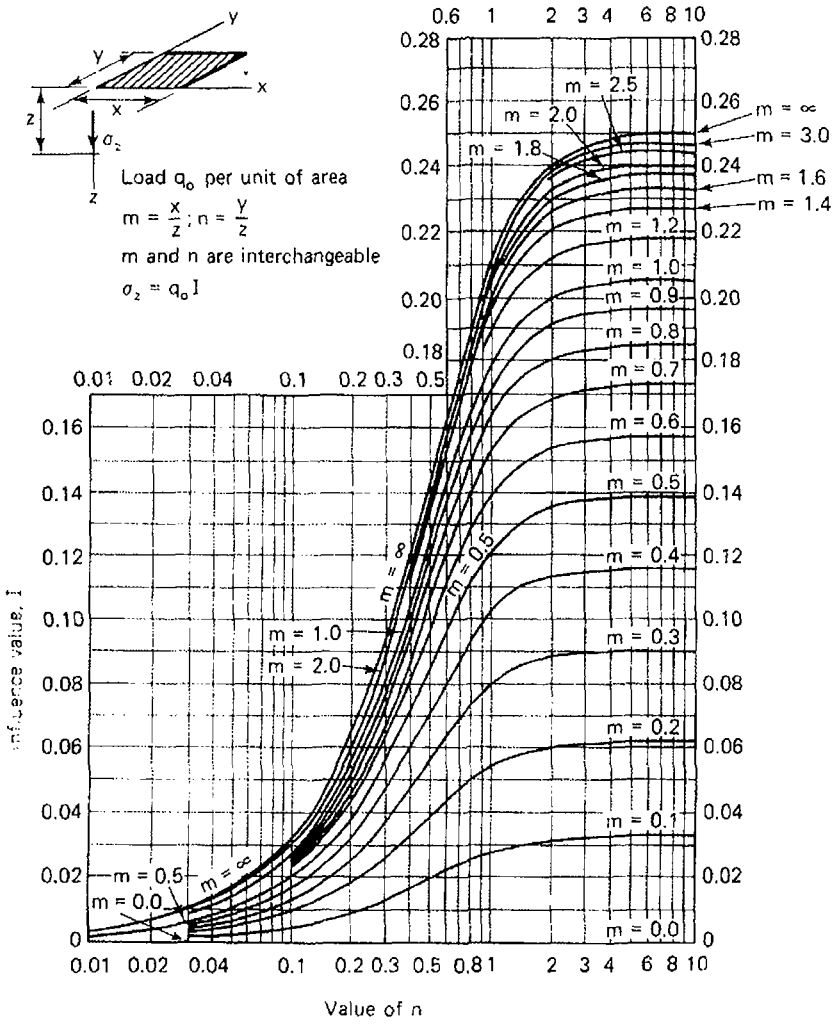


Fig. 8.21 Influence value for vertical stress under corner of a uniformly loaded rectangular area (after U.S. Navy, 1971).

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Calculation Sheet

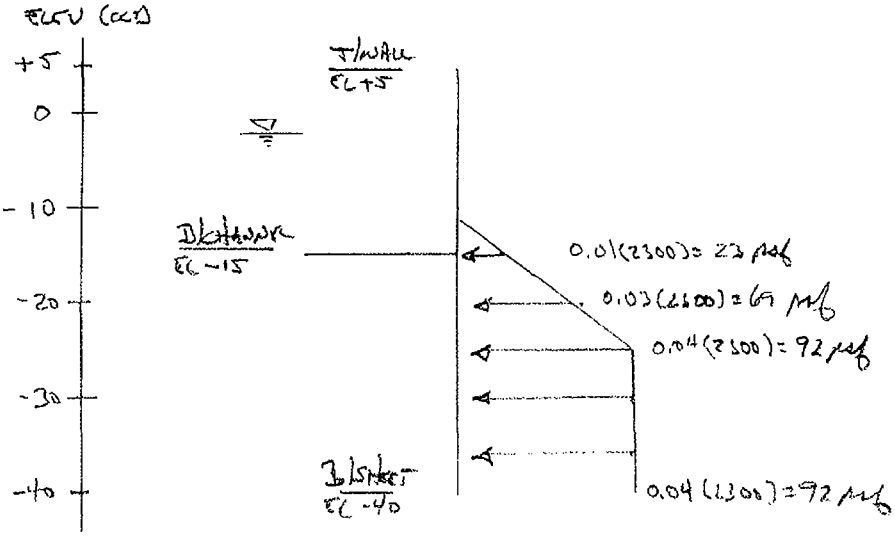
Project				Subject			
CHICAGO SPUR				DUMP STOCKPILE			
Originated By	Date	Checked By	Date	STS Job No.	Scale	Sheet No.	Of
[illegible]	1/24/08	FS	1/24/08	20697.12			

FOR AN AVERAGE SURCHARGE PRESSURE OF

$$q_o = \gamma H = (115\ pcf)(20') = 2300\ psf$$

THE LATERAL PRESSURE ON THE SEAWALL IS

$$2\, q_o\, \Sigma I\ (K_o = 0.5) = q_o\, \Sigma I$$



ACTIVE EARTH PRESSURE AT EL -25 CCD WITH $K_a = 1/3$

$$P_a = \left(7(115) + 23(115 - 62.4)\right)(1/3) = 672\ psf$$

$$\text{SURCHARGE} = \frac{92}{672} = 14\%\ \text{OF ACTIVE}$$

⇒ THE EFFECT ON WALL STABILITY IS NEGLIGIBLE